=Download this project, make sure open Command Line, and execute 'cd' into the projects folder=

(You can just execute 'cd <the whole path of project>', if it is in different drive, for windows, execute 'd:' to get to Drive D, etc.)

=Install Python 3=

https://www.python.org/downloads/release/python-372/

(Scroll to the bottom, choose your desired OS and bit system)

=Set up Environment for python=

https://github.com/BurntSushi/nfldb/wiki/Python-&-pip-Windows-installation

(It is Python 2 Manual, but can be adapted to Python 3 anyway.)

=Install python's pip=

https://pip.pypa.io/en/stable/installing/

=Install python libraries to run the web application's backend=

Clear corrupted module first (Make sure you are in the project directory to execute commands)

pip uninstall scipy

And Then

pip install -r requirements.txt

=Install node.js npm nvm and yarn=

https://github.com/coreybutler/nvm-windows

=Install npm modules to run web application frontend=

npm install or ***yarn add***

=Update frontend using (for development only)=

yarn build

=Install PostgreSQL along with setting up users and database=

Download

After run, becareful about setting locale, which affects the language in its command line use!! Also remember your password and don't re-install too soon.

Set user as 'postgres', password as 'root' if you prefer to use the default database user and password provided in the project.

https://www.enterprisedb.com/downloads/postgres-postgresql-downloads

Setting up

Make sure the database name is 'plant_soil_buddy', and be sure to set up step by steps, set database accessibility and set super user (or admin user) with any name you wish.

https://medium.com/agatha-codes/painless-postgresql-django-d4f03364989

=Update database or finish setting up project's database systems using (You have to do this!!)=

python manage.py makemigrations

And then

python manage.py migrate

=Install Arduino on Computer=

https://www.arduino.cc/en/main/software

=Set up Arduino Program=

Open …/plant-soil-buddy/arduino_setup_sensor/arduino_setup_sensor.ino

and then

Click "Upload"  **Wait for it to finish**

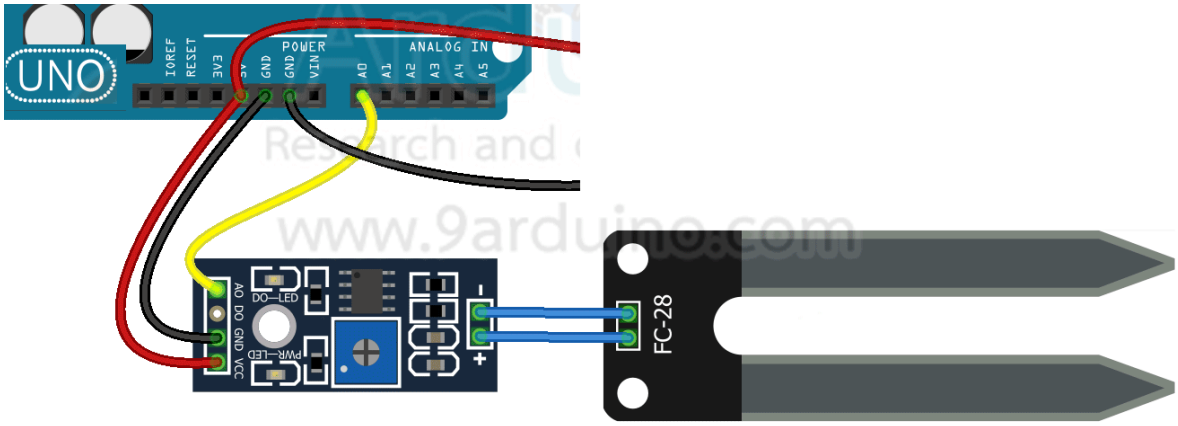
At the bottom right of the program, it shows 'COM8' as an example USB PORT NUMBER which is to be used for real connection of this project, yours may differ.

=Buy Important items if you don't own them yet=

Arduino UNO (USB included)

https://www.arduinoall.com/product/16/arduino-uno-r3-%E0%B8%9E%E0%B8%A3%E0%B9%89%E0%B8%AD%E0%B8%A1%E0%B8%AA%E0%B8%B2%E0%B8%A2-usb-%E0%B8%84%E0%B8%AD%E0%B8%A3%E0%B9%8C%E0%B8%AA%E0%B9%80%E0%B8%A3%E0%B8%B5%E0%B8%A2%E0%B8%99-arduino-starter-%E0%B8%AD%E0%B8%AD%E0%B8%99%E0%B9%84%E0%B8%A5%E0%B8%99%E0%B9%8C

Arduino Moist sensor (Female to Female Wires included)



Here is how it connects.

https://www.arduinoall.com/product/184/soil-moisture-sensor-module

Male-Female Wires > 6 wires, long enough to connect (The diagram shows it uses 3 for moist sensor)

https://www.arduinoall.com/product/2648/%E0%B8%AA%E0%B8%B2%E0%B8%A2-%E0%B9%84%E0%B8%9F%E0%B8%88%E0%B8%B1%E0%B8%A1%E0%B9%80%E0%B8%9B%E0%B8%AD%E0%B8%A3%E0%B9%8C-%E0%B8%9C%E0%B8%B9%E0%B9%89-%E0%B9%80%E0%B8%A1%E0%B8%B5%E0%B8%A2-%E0%B8%A2%E0%B8%B2%E0%B8%A7-40cm-%E0%B8%88%E0%B8%B3%E0%B8%99%E0%B8%A7%E0%B8%99-40-%E0%B9%80%E0%B8%AA%E0%B9%89%E0%B8%99

Doctor Plant Exclusive pH sensor **(You need a small headed screwdriver to connect the Male-Male wires firmly into the green wire box at the top of this sensor, roll in and out to adjust its firmness carefully.)**

http://www.arduinostep.com/product/366/%E0%B9%80%E0%B8%8B%E0%B8%99%E0%B9%80%E0%B8%8B%E0%B8%AD%E0%B8%A3%E0%B9%8C%E0%B8%A7%E0%B8%B1%E0%B8%94%E0%B8%9B%E0%B8%B8%E0%B9%8B%E0%B8%A2%E0%B9%83%E0%B8%99%E0%B8%94%E0%B8%B4%E0%B8%99npk-meter-%E0%B9%80%E0%B8%8B%E0%B8%99%E0%B9%80%E0%B8%8B%E0%B8%AD%E0%B8%A3%E0%B9%8C%E0%B8%A7%E0%B8%B1%E0%B8%94%E0%B8%84%E0%B8%A7%E0%B8%B2%E0%B8%A1%E0%B8%AA%E0%B8%A1%E0%B8%9A%E0%B8%B9%E0%B8%A3%E0%B8%93%E0%B9%8C%E0%B9%83%E0%B8%99%E0%B8%94%E0%B8%B4%E0%B8%99-fertilityph-%E0%B9%83%E0%B8%99%E0%B8%94%E0%B8%B4%E0%B8%99

Male-Male Wires > 6 wires for connect the pH sensor and breadboard for multi sensor

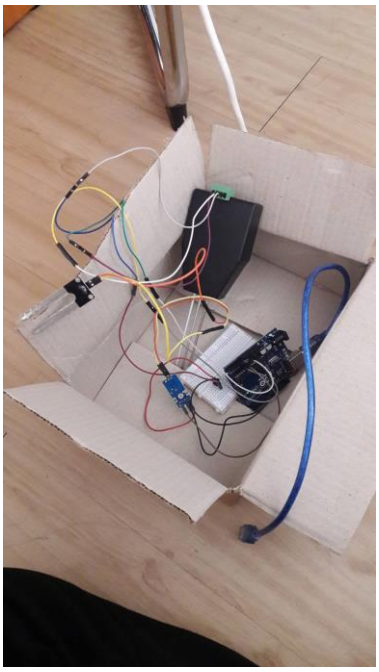
https://www.arduinoall.com/product/2679/%E0%B8%AA%E0%B8%B2%E0%B8%A2%E0%B9%84%E0%B8%9F%E0%B8%88%E0%B8%B1%E0%B8%A1%E0%B9%80%E0%B8%9B%E0%B8%AD%E0%B8%A3%E0%B9%8C-jumpe-%E0%B8%9C%E0%B8%B9%E0%B9%89-%E0%B8%9C%E0%B8%B9%E0%B9%89-%E0%B8%A2%E0%B8%B2%E0%B8%A7-20cm-%E0%B8%88%E0%B8%B3%E0%B8%99%E0%B8%A7%E0%B8%99-10-%E0%B9%80%E0%B8%AA%E0%B9%89%E0%B8%99

Breadboard x 1

(To enable multi sensors into single Arduino UNO, place the Male-Male head of the wire for UNO that wires about **5V** into same 6 vertical blocks.)

https://www.arduinoall.com/product/252/%E0%B8%9A%E0%B8%AD%E0%B8%A3%E0%B9%8C%E0%B8%94%E0%B8%97%E0%B8%94%E0%B8%A5%E0%B8%AD%E0%B8%87-breadboard-400-holes

The wiring must be similar to this.



=Run using=

python manage.py runserver

=Use the Web, finally=

Open http://localhost:8000 in your web browser

Then

Register your user profile

Then

Create your Soil Profile for first time, make sure its name and location are easy to type in keyboard as to use in the recording program, but after this you can't do anything yet.

As the web separates with the recording program

=Set up and Run Monitor Program=

Copy '…/plant-soil-buddy/sensor_monitor_program/soil_sensor_monitor_program.py' to somewhere you can easily access from the terminal command line.

Then

Open another Command Line separately; go to where the said python .py program is copied to.

Then Run

python soil_sensor_monitor_program.py

=Use monitor program=

Enter your registered username you just register in the web. (CASE SENSITIVE)

Then

Enter your just created soil profile's name and location correctly. (CASE SENSITIVE)

Then

Enter the frequency in minutes.

Minimum at 0.1 minutes (6 seconds). Maximum at 1440 minutes (1 day).

Then

Enter the port number you saw back in Arduino Program, or you can use Device Manager to look it up as well. It is the port that Arduino depends on for its USB connection input/output.

Then

Wait a bit, and see its record data, it will appears "Recording…" when it really performs the record.

=Back to Web for Recommendation=

Click 'View Recorded Data Scatter Plot' on the Soil Profile you just committed recording to see the evidences.

Click 'Update Recommendation' to see the recommendation results.

=That's all, you can see more things on your own now.=